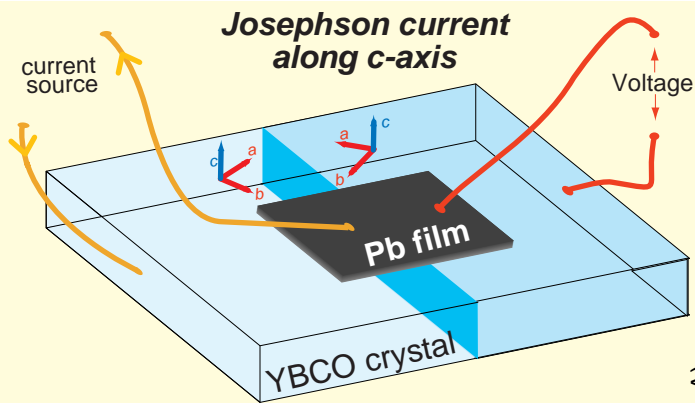


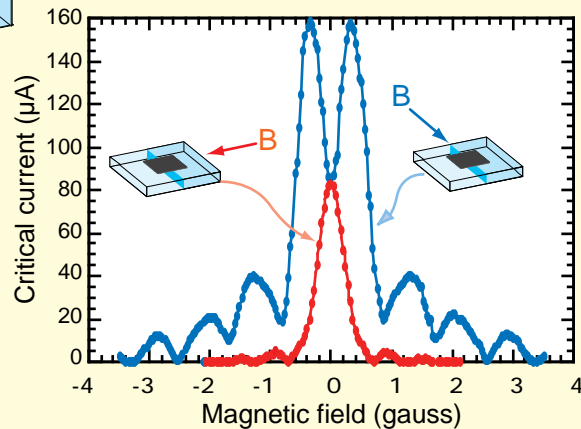
# High- $T_c$ Superconductor Controversy Resolved

## *Symmetry of "Order Parameter" Shown to be of Mixed Character*



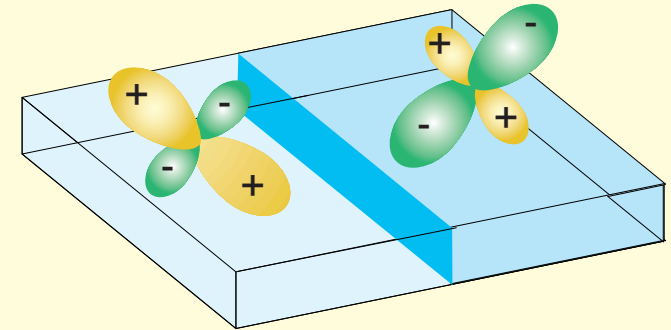
Pb film covers boundary separating YBCO twin domains whose a and b axes are rotated by 90 degrees. Josephson tunneling occurs along the c-axis from the YBCO into the lead film. The critical current, at which there is a breakdown of superconductivity and therefore a loss of zero resistance, is determined by monitoring the onset of the voltage drop across the junction, which results from that initiation of resistance.

**Critical current as a function of magnetic field**



When the applied magnetic field is perpendicular to the twin boundary (red), the critical current has a single large maximum at zero field. In contrast, when the field is parallel to the twin boundary (blue), the critical current is a local minimum at zero field.

**Symmetry of "Cooper pairs"**



Experimental data cannot be explained by either pure d or pure s symmetry of the Cooper pairs in the YBCO. Instead, a transition from "d+s" (left) symmetry to "d-s" (right) symmetry across the twin boundary must be invoked. Thus, the d-wave symmetry remains dominant.